

SEQUENCE LISTING

<110> Jones, Kenneth A.

Walker, Mary W.

Tamm, Joseph

Branchek, Theresa A.

Gerald, Christophe P.G.

<120> Chimeric G-Proteins And Uses Thereof

<130> 59896

<140>

<141>

<160> 45

<170> PatentIn Ver. 2.1

<210> 1

<211> 355

<212> PRT

<213> C. elegans

<400> 1

Met Ala Cys Cys Leu Ser Glu Glu Ala Arg Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Lys Gln Leu Gln Arg Asp Lys Arg Asn Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Gln Gly Tyr Ser Glu Glu
50 55 60

Asp Lys Arg Ala His Ile Arg Leu Val Tyr Gln Asn Val Phe Met Ala
65 70 75 80

Ile Gln Ser Met Ile Arg Ala Met Asp Thr Leu Asp Ile Lys Phe Gly
85 90 95

Asn Glu Ser Glu Glu Leu Gln Glu Lys Ala Ala Val Val Arg Glu Val
100 105 110

Asp Phe Glu Ser Val Thr Ser Phe Glu Glu Pro Tyr Val Ser Tyr Ile
115 120 125

Lys Glu Leu Trp Glu Asp Ser Gly Ile Gln Glu Cys Tyr Asp Arg Arg
130 135 140

Arg Glu Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Ser Asp Leu
145 150 155 160

Arg Arg Leu Ala Val Pro Asp Tyr Leu Pro Thr Glu Gln Asp Ile Leu
165 170 175

Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu
180 185 190

Glu Gln Ile Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu
195 200 205

Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe
210 215 220

Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Cys Asp Asn
225 230 235 240

Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr
245 250 255

Tyr Pro Trp Phe Thr Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys
260 265 270

Asp Leu Leu Glu Glu Lys Ile Leu Tyr Ser His Leu Ala Asp Tyr Phe
275 280 285

Pro Glu Tyr Asp Gly Pro Pro Arg Asp Pro Ile Ala Ala Arg Glu Phe
290 295 300

Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ala Asp Lys Ile Ile
305 310 315 320

Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val
325 330 335

Phe Ala Ala Val Lys Asp Thr Ile Leu Gln His Asn Leu Lys Tyr Ile
340 345 350

Gly Leu Cys
355

<210> 2

<211> 355

<212> PRT

<213> C. elegans

<400> 2

Met Ala Cys Cys Leu Ser Glu Glu Ala Arg Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Lys Gln Leu Gln Arg Asp Lys Arg Asn Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Gln Gly Tyr Ser Glu Glu
50 55 60

Asp Lys Arg Ala His Ile Arg Leu Val Tyr Gln Asn Val Phe Met Ala
65 70 75 80

Ile Gln Ser Met Ile Arg Ala Met Asp Thr Leu Asp Ile Lys Phe Gly
85 90 95

Asn Glu Ser Glu Glu Leu Gln Glu Lys Ala Ala Val Val Arg Glu Val
100 105 110

Asp Phe Glu Ser Val Thr Ser Phe Glu Glu Pro Tyr Val Ser Tyr Ile
115 120 125

Lys Glu Leu Trp Glu Asp Ser Gly Ile Gln Glu Cys Tyr Asp Arg Arg
130 135 140

Arg Glu Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Ser Asp Leu
145 150 155 160

Arg Arg Leu Ala Val Pro Asp Tyr Leu Pro Thr Glu Gln Asp Ile Leu
165 170 175

Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu
180 185 190

Glu Gln Ile Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu
195 200 205

Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe
210 215 220

Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Cys Asp Asn

225

230

235

240

Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr
245 250 255

Tyr Pro Trp Phe Thr Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys
260 265 270

Asp Leu Leu Glu Glu Lys Ile Leu Tyr Ser His Leu Ala Asp Tyr Phe
275 280 285

Pro Glu Tyr Asp Gly Pro Pro Arg Asp Pro Ile Ala Ala Arg Glu Phe
290 295 300

Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ala Asp Lys Ile Ile
305 310 315 320

Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val
325 330 335

Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Asn Asn Leu Lys Tyr Ile
340 345 350

Gly Leu Cys
355

<210> 3

<211> 355

<212> PRT

<213> C. elegans

<400> 3

Met Ala Cys Cys Leu Ser Glu Glu Ala Arg Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Lys Gln Leu Gln Arg Asp Lys Arg Asn Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Gln Gly Tyr Ser Glu Glu
50 55 60

Asp Lys Arg Ala His Ile Arg Leu Val Tyr Gln Asn Val Phe Met Ala
65 70 75 80

Ile Gln Ser Met Ile Arg Ala Met Asp Thr Leu Asp Ile Lys Phe Gly
85 90 95

Asn Glu Ser Glu Glu Leu Gln Glu Lys Ala Ala Val Val Arg Glu Val
100 105 110

Asp Phe Glu Ser Val Thr Ser Phe Glu Glu Pro Tyr Val Ser Tyr Ile
115 120 125

Lys Glu Leu Trp Glu Asp Ser Gly Ile Gln Glu Cys Tyr Asp Arg Arg
130 135 140

Arg Glu Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Ser Asp Leu
145 150 155 160

Arg Arg Leu Ala Val Pro Asp Tyr Leu Pro Thr Glu Gln Asp Ile Leu
165 170 175

Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu
180 185 190

Glu Gln Ile Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu
195 200 205

Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe
210 215 220

Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Cys Asp Asn
225 230 235 240

Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr
245 250 255

Tyr Pro Trp Phe Thr Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys
260 265 270

Asp Leu Leu Glu Glu Lys Ile Leu Tyr Ser His Leu Ala Asp Tyr Phe
275 280 285

Pro Glu Tyr Asp Gly Pro Pro Arg Asp Pro Ile Ala Ala Arg Glu Phe
290 295 300

Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ala Asp Lys Ile Ile
305 310 315 320

Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val
325 330 335

Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Met His Leu Arg Gln Tyr
 340 345 350

Glu Leu Leu
355

<210> 4
<211> 355
<212> PRT
<213> *C. elegans*

<400> 4
Met Ala Cys Cys Leu Ser Glu Glu Ala Arg Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Lys Gln Leu Gln Arg Asp Lys Arg Asn Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
 35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Gln Gly Tyr Ser Glu Glu
 50 55 60

Asp Lys Arg Ala His Ile Arg Leu Val Tyr Gln Asn Val Phe Met Ala
65 70 75 80

Ile Gln Ser Met Ile Arg Ala Met Asp Thr Leu Asp Ile Lys Phe Gly
85 90 95

Asp Phe Glu Ser Val Thr Ser Phe Glu Glu Pro Tyr Val Ser Tyr Ile
 115 120 125

Lys Glu Leu Trp Glu Asp Ser Gly Ile Gln Glu Cys Tyr Asp Arg Arg
 130 135 140

Arg Glu Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Ser Asp Leu
 145 150 155 160

Arg Arg Leu Ala Val Pro Asp Tyr Leu Pro Thr Glu Gln Asp Ile Leu
165 170 175

Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu
 180 185 190

Glu Gln Ile Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu
195 200 205

Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe
210 215 220

Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Cys Asp Asn
225 230 235 240

Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr
245 250 255

Tyr Pro Trp Phe Thr Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys
260 265 270

Asp Leu Leu Glu Glu Lys Ile Leu Tyr Ser His Leu Ala Asp Tyr Phe
275 280 285

Pro Glu Tyr Asp Gly Pro Pro Arg Asp Pro Ile Ala Ala Arg Glu Phe
290 295 300

Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ala Asp Lys Ile Ile
305 310 315 320

Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Arg Val
325 330 335

Phe Asn Asp Cys Arg Asp Ile Ile Gln Arg Met His Leu Arg Gln Tyr
340 345 350

Glu Leu Leu
355

<210> 5

<211> 355

<212> PRT

<213> C. elegans

<400> 5

Met Ala Cys Cys Leu Ser Glu Glu Ala Arg Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Lys Gln Leu Gln Arg Asp Lys Arg Asn Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr

35

40

45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Gln Gly Tyr Ser Glu Glu
50 55 60

Asp Lys Arg Ala His Ile Arg Leu Val Tyr Gln Asn Val Phe Met Ala
65 70 75 80

Ile Gln Ser Met Ile Arg Ala Met Asp Thr Leu Asp Ile Lys Phe Gly
85 90 95

Asn Glu Ser Glu Glu Leu Gln Glu Lys Ala Ala Val Val Arg Glu Val
100 105 110

Asp Phe Glu Ser Val Thr Ser Phe Glu Glu Pro Tyr Val Ser Tyr Ile
115 120 125

Lys Glu Leu Trp Glu Asp Ser Gly Ile Gln Glu Cys Tyr Asp Arg Arg
130 135 140

Arg Glu Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Ser Asp Leu
145 150 155 160

Arg Arg Leu Ala Val Pro Asp Tyr Leu Pro Thr Glu Gln Asp Ile Leu
165 170 175

Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu
180 185 190

Glu Gln Ile Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu
195 200 205

Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe
210 215 220

Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Cys Asp Asn
225 230 235 240

Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr
245 250 255

Tyr Pro Trp Phe Thr Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys
260 265 270

Asp Leu Leu Glu Glu Lys Ile Leu Tyr Ser His Leu Ala Asp Tyr Phe
275 280 285

Pro Glu Tyr Asp Gly Pro Pro Arg Asp Pro Ile Ala Ala Arg Glu Phe

290

295

300

Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ala Asp Lys Ile Ile
305 310 315 320

Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val
325 330 335

Phe Ala Ala Val Lys Asp Thr Ile Leu Gln His Asn Leu Lys Glu Cys
340 345 350

Gly Leu Tyr
355

<210> 6

<211> 359

<212> PRT

<213> Homo sapiens

<400> 6

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp
20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
50 55 60

Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr
115 120 125

Val Asp Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln
165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
180 185 190

Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
195 200 205

Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
210 215 220

Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
225 230 235 240

Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
245 250 255

Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
260 265 270

Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
275 280 285

Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
340 345 350

Leu Lys Glu Tyr Asn Ala Val
355

<210> 7
<211> 359
<212> PRT
<213> Canis familiaris

<400> 7

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp
20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
50 55 60

Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu
100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr
115 120 125

Val Asp Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ala Tyr Leu Pro Thr Gln
165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
180 185 190

Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
195 200 205

Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
210 215 220

Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
225 230 235 240

Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
245 250 255

Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
260 265 270

Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
275 280 285

Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
340 345 350

Leu Lys Glu Tyr Asn Leu Val
355

<210> 8

<211> 359

<212> PRT

<213> Mus musculus

<400> 8

Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Lys
1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg His Val Arg Arg Asp
20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
50 55 60

Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
65 70 75 80

Gln Asn Ile Phe Thr Ala Met Gln Ala Met Ile Arg Ala Met Asp Thr
85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Ala His Ala Gln Leu

100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ser Ala Phe Glu Asn Pro Tyr
115 . 120 125

Val Asp Ala Ile Lys Ser Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
145 150 155 160

Leu Asn Asp Leu Asp Arg Val Ala Asp Pro Ser Tyr Leu Pro Thr Gln
165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
180 185 190

Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
195 200 205

Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
210 215 220

Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
225 230 235 240

Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
245 250 255

Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
260 265 270

Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
275 280 285

Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
340 345 350

Leu Lys Glu Tyr Asn Leu Val

<210> 9
<211> 359
<212> PRT
<213> Xenopus laevis

<400> 9
Met Thr Leu Glu Ser Ile Met Ala Cys Cys Leu Ser Glu Glu Ala Glu
1 5 10 15

Glu Ala Arg Arg Ile Asn Asp Glu Ile Glu Arg Gln Leu Arg Arg Asp
20 25 30

Lys Arg Asp Ala Arg Arg Glu Leu Lys Leu Leu Leu Gly Thr Gly
35 40 45

Glu Ser Gly Lys Ser Thr Phe Ile Lys Gln Met Arg Ile Ile His Gly
50 55 60

Ser Gly Tyr Ser Asp Glu Asp Lys Arg Gly Phe Thr Lys Leu Val Tyr
65 70 75 80

Gln Asn Ile Phe Ser Ala Met Gln Ala Met Ile Arg Ala Met Glu Thr
85 90 95

Leu Lys Ile Pro Tyr Lys Tyr Glu His Asn Lys Gly His Ala Leu Leu
100 105 110

Val Arg Glu Val Asp Val Glu Lys Val Ala Ser Phe Glu Asn Pro Tyr
115 120 125

Val Asp Ala Ile Lys Tyr Leu Trp Asn Asp Pro Gly Ile Gln Glu Cys
130 135 140

Tyr Asp Arg Arg Arg Glu Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr
145 150 155 160

Leu Asn Asp Leu Asp Arg Ile Ala Thr His Gly Tyr Leu Pro Thr Gln
165 170 175

Gln Asp Val Leu Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr
180 185 190

Pro Phe Asp Leu Gln Ser Val Ile Phe Arg Met Val Asp Val Gly Gly
195 200 205

Gln Arg Ser Glu Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr
210 215 220

Ser Ile Met Phe Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val
225 230 235 240

Glu Ser Asp Asn Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg
245 250 255

Thr Ile Ile Thr Tyr Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe
260 265 270

Leu Asn Lys Lys Asp Leu Leu Glu Glu Lys Ile Met Tyr Ser His Leu
275 280 285

Val Asp Tyr Phe Pro Glu Tyr Asp Gly Pro Gln Arg Asp Ala Gln Ala
290 295 300

Ala Arg Glu Phe Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ser
305 310 315 320

Asp Lys Ile Ile Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn
325 330 335

Ile Arg Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn
340 345 350

Leu Lys Glu Tyr Asn Leu Val
355

<210> 10

<211> 353

<212> PRT

<213> Patinopecten yessoensis

<400> 10

Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Gln Lys Arg Ile Asn
1 5 10 15

Cys Glu Ile Glu Lys Glu Leu Arg Lys Ala Lys Arg Asp Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Thr Gly Tyr Ser Glu Glu
50 55 60

Asp Lys Arg Gly Phe Ile Lys Ile Val Tyr Gln Asn Ile Phe Met Ala
65 70 75 80

Met His Ser Met Ile Arg Ala Met Asp Thr Ile Lys Ile Ser Phe Glu
85 90 95

Val Ala Asp Asn Glu Glu Asn Ala Ile Met Ile Arg Gln Val Asp Tyr
100 105 110

Glu Thr Val Thr Thr Leu Asp Ser Gln Ser Val Glu Ala Ile Leu Ser
115 120 125

Leu Trp Ala Asp Ala Gly Ile Gln Glu Cys Tyr Asp Arg Arg Glu
130 135 140

Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Asp Ala Val Asp Arg
145 150 155 160

Ile Ala Glu Pro Asn Tyr Leu Pro Thr Leu Gln Asp Ile Leu Arg Val
165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Asp Ser
180 185 190

Ile Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
245 250 255

Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
260 265 270

Leu Glu Glu Lys Ile Met His Ser His Leu Val Asp Tyr Phe Pro Glu
275 280 285

Phe Asp Gly Gln Lys Lys Asp Ala Gln Gly Ala Arg Glu Phe Ile Leu
290 295 300

Arg Met Phe Val Asp Leu Asn Pro Asp Pro Asp Lys Ile Ile Tyr Ser
305 310 315 320

His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu
340 345 350

Val

<210> 11
<211> 353
<212> PRT
<213> Lymnaea stagnalis

<400> 11
Met Ala Cys Cys Ile Pro Asp Glu Leu Lys Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Arg Gln Leu Lys Arg Asp Lys Arg Asp Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ala Gly Tyr Ser Asp Glu
50 55 60

Asp Lys Arg Ser His Ile Lys Ile Val Tyr Gln Asn Ile Phe Met Ala
65 70 75 80

Met His Ala Met Ile Arg Ala Met Asp Thr Leu Asn Ile Gln Tyr Ile
85 90 95

Asn Pro Ala Asn Arg Glu Asn Gly Asn Met Ile Arg Gln Ile Asp Tyr
100 105 110

Glu Thr Val Thr Thr Phe Asp Lys Pro Cys Val Asp Ala Ile Ile Ser
115 120 125

Leu Trp Asn Asp Asp Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
130 135 140

Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Asp Ser Val Glu Arg
145 150 155 160

Ile Ser Gln Gln Asp Tyr Leu Pro Thr Leu Gln Asp Ile Leu Arg Val

165

170

175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Asp Ser
180 185 190

Ile Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Asn
225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
245 250 255

Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
260 265 270

Leu Glu Glu Lys Ile Met His Ser His Leu Val Asp Tyr Phe Pro Glu
275 280 285

Phe Asp Gly Pro Lys Lys Glu Ala Ser Thr Ala Arg Glu Phe Ile Leu
290 295 300

Lys Met Phe Val Glu Leu Asn Pro Asp Pro Asp Lys Ile Ile Tyr Ser
305 310 315 320

His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu
340 345 350

Val

<210> 12

<211> 353

<212> PRT

<213> Drosophila melanogaster

<400> 12

Met Glu Cys Cys Leu Ser Glu Glu Ala Lys Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Lys Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu
50 55 60

Asp Lys Arg Gly Tyr Ile Lys Leu Val Phe Gln Asn Ile Phe Met Ala
65 70 75 80

Met Gln Ser Met Ile Lys Ala Met Asp Met Leu Lys Ile Ser Tyr Gly
85 90 95

Gln Gly Glu His Ser Glu Leu Ala Asp Leu Val Met Ser Ile Asp Tyr
100 105 110

Glu Thr Val Thr Thr Phe Glu Asp Pro Tyr Leu Asn Ala Ile Lys Thr
115 120 125

Leu Trp Asp Asp Ala Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
130 135 140

Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Ser Asp Leu Ala Arg
145 150 155 160

Ile Glu Gln Ala Asp Tyr Leu Pro Thr Glu Gln Asp Ile Leu Arg Ala
165 170 175

Arg Val Pro Thr Thr Gly Ile Leu Glu Tyr Pro Phe Asp Leu Asp Gly
180 185 190

Ile Val Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Ile Phe Leu Val
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Ile Leu Phe Glu Ser Asp Asn Glu Asn
225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
245 250 255

Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
260 265 270

Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
275 280 285

Tyr Asp Gly Pro Lys Gln Asp His Ala Ala Ala Lys Gln Phe Val Leu
290 295 300

Lys Lys Tyr Leu Ala Cys Asn Pro Asp Pro Glu Arg Gln Cys Tyr Ser
305 310 315 320

His Phe Thr Thr Ala Thr Asp Thr Glu Asn Ile Lys Leu Val Phe Cys
325 330 335

Ala Val Lys Asp Thr Ile Met Gln Asn Ala Leu Lys Glu Phe Asn Leu
340 345 350

Gly

<210> 13

<211> 353

<212> PRT

<213> Drosophila melanogaster

<400> 13

Met Glu Cys Cys Leu Ser Glu Glu Ala Lys Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Lys Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu
50 55 60

Asp Lys Arg Gly Tyr Ile Lys Leu Val Phe Gln Asn Ile Phe Met Ala
65 70 75 80

Met Gln Ser Met Ile Lys Ala Met Asp Met Leu Lys Ile Ser Tyr Gly
85 90 95

Gln Gly Glu His Ser Glu Leu Ala Asp Leu Val Met Ser Ile Asp Tyr
100 105 110

Glu Thr Val Thr Thr Phe Glu Asp Pro Tyr Leu Asn Ala Ile Lys Thr
115 120 125

Leu Trp Asp Asp Ala Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
130 135 140

Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Lys Asp Leu Asp Arg
145 150 155 160

Val Ala Gln Pro Ala Tyr Leu Pro Thr Glu Gln Asp Ile Leu Arg Val
165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Glu Glu
180 185 190

Ile Arg Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Ile Phe Leu Val
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Ile Leu Phe Glu Ser Asp Asn Glu Asn
225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
245 250 255

Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
260 265 270

Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
275 280 285

Tyr Asp Gly Pro Gln Arg Asp Ala Ile Thr Ala Arg Glu Phe Ile Leu
290 295 300

Arg Met Phe Val Asp Leu Asn Pro Asp Ser Glu Lys Ile Ile Tyr Ser
305 310 315 320

His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Ser Asn Leu Lys Glu Tyr Asn Leu
340 345 350

Val

<211> 353

<212> PRT

<213> Homarus americanus

<400> 14

Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Arg Gln Leu Arg Lys Asp Lys Arg Asp Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ala Gly Tyr Ser Asp Glu
50 55 60

Asp Lys Arg Gly Phe Ile Lys Leu Val Phe Gln Asn Ile Phe Met Ala
65 70 75 80

Met Gln Ser Met Ile Arg Ala Met Asp Leu Leu Gln Ile Ser Tyr Gly
85 90 95

Asp Ser Ala Asn Ile Glu His Ala Asp Leu Val Arg Ser Val Asp Tyr
100 105 110

Glu Ser Val Thr Thr Phe Glu Glu Pro Tyr Val Thr Ala Met Asn Ser
115 120 125

Leu Trp Gln Asp Thr Gly Ile Gln His Cys Tyr Asp Arg Arg Arg Glu
130 135 140

Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Thr Asp Leu Asp Arg
145 150 155 160

Ile Ala Ala Lys Asp Tyr Val Ser Thr Leu Gln Asp Ile Leu Arg Val
165 170 175

Arg Ala Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Glu Glu
180 185 190

Ile Arg Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Ile Phe Leu Val
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Ile Leu Phe Glu Ser Asp Asn Glu Asn

Met Gln Ser Met Asn Lys Ala Met Glu Met Leu Lys Ile Ser Tyr Lys
85 90 95

Asp Arg Asn Asn Ile Glu Asn Ala Glu Leu Val Leu Ser Val Asp Tyr
100 105 110

Glu Thr Val Thr Thr Phe Asp Ser Pro Tyr Val Glu Ala Ile Lys Ser
115 120 125

Leu Trp Val Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
130 135 140

Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Asn Asp Ile Asp Arg
145 150 155 160

Ile Ala Val Pro Asn Tyr Leu Pro Thr Gln Gln Asp Ile Leu Arg Val
165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Ile Leu Asp Ser
180 185 190

Ile Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Ile Phe Leu Val
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Ile Leu Phe Glu Ser Asp Asn Glu Asn
225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Lys Thr Ile Ile Thr Tyr Pro
245 250 255

Trp Phe Leu Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
260 265 270

Leu Glu Glu Lys Ile Met Phe Ser His Leu Val Asp Tyr Phe Pro Glu
275 280 285

Tyr Asp Gly Pro Lys Lys Asp Ala Val Gln Gly Arg Glu Phe Ile Leu
290 295 300

Lys Met Phe Val Asp Leu Asn Pro Asp Ser Glu Lys Ile Ile Tyr Ser
305 310 315 320

His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn Leu
340 345 350

Val

<210> 16

<211> 354

<212> PRT

<213> Loligo forbesi

<400> 16

Met Ala Cys Cys Leu Ser Glu Glu Ala Lys Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Lys Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Glu Glu
50 55 60

Asp Arg Lys Gly Phe Glu Lys Ile Val Tyr Gln Asn Ile Phe Ser Ala
65 70 75 80

Ile Gln Thr Leu Ile Ala Ala Met Glu Thr Leu Ser Leu Glu Tyr Lys
85 90 95

Asp Pro Ser Asn Asn Glu His Ala Glu Phe Leu Asn Ser Ile Asp Ala
100 105 110

Asp Ser Ala Asp Ile Phe Glu Asp Gly His Val Thr Ala Ile Lys Gly
115 120 125

Cys Trp Thr Asp Pro Gly Met Gln Glu Cys Tyr Asp Arg Arg Arg Glu
130 135 140

Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Asp Asp Val Glu Arg
145 150 155 160

Ile His Glu Pro Gly Tyr Ile Pro Thr Leu Gln Asp Ile Leu Arg Val
165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Tyr Ser
180 185 190

Ile Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe Leu Val
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Ser Asp Asn Glu Glu
225 230 235 240

Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr
245 250 255

Pro Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp
260 265 270

Leu Leu Glu Glu Lys Ile Met Thr Ser His Leu Ala Asp Tyr Phe Pro
275 280 285

Asp Tyr Asp Gly Pro Lys Cys Asp Tyr Glu Ala Ala Arg Glu Phe Met
290 295 300

Met Asp Ser Tyr Met Asp Leu Asn Glu Asp Lys Glu Lys Met Leu Tyr
305 310 315 320

Tyr His Tyr Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe
325 330 335

Ala Ala Val Lys Asp Thr Ile Leu Gln Leu Asn Leu Lys Glu Tyr Asn
340 345 350

Leu Val

<210> 17
<211> 355
<212> PRT
<213> *Caenorhabditis elegans*

<400> 17
Met Ala Cys Cys Leu Ser Glu Glu Ala Arg Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Lys Gln Leu Gln Arg Asp Lys Arg Asn Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr

35

40

45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Gln Gly Tyr Ser Glu Glu
 50 55 60

Asp Lys Arg Ala His Ile Arg Leu Val Tyr Gln Asn Val Phe Met Ala
 65 70 75 80

Ile Gln Ser Met Ile Arg Ala Met Asp Thr Leu Asp Ile Lys Phe Gly
 85 90 95

Asn Glu Ser Glu Glu Leu Gln Glu Lys Ala Ala Val Val Arg Glu Val
 100 105 110

Asp Phe Glu Ser Val Thr Ser Phe Glu Glu Pro Tyr Val Ser Tyr Ile
 115 120 125

Lys Glu Leu Trp Glu Asp Ser Gly Ile Gln Glu Cys Tyr Asp Arg Arg
 130 135 140

Arg Glu Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Ser Asp Leu
 145 150 155 160

Arg Arg Leu Ala Val Pro Asp Tyr Leu Pro Thr Glu Gln Asp Ile Leu
 165 170 175

Arg Val Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu
 180 185 190

Glu Gln Ile Ile Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu
 195 200 205

Arg Arg Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Met Phe
 210 215 220

Leu Val Ala Leu Ser Glu Tyr Asp Gln Val Leu Val Glu Cys Asp Asn
 225 230 235 240

Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr
 245 250 255

Tyr Pro Trp Phe Thr Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys
 260 265 270

Asp Leu Leu Glu Glu Lys Ile Leu Tyr Ser His Leu Ala Asp Tyr Phe
 275 280 285

Pro Glu Tyr Asp Gly Pro Pro Arg Asp Pro Ile Ala Ala Arg Glu Phe

290

295

300

Ile Leu Lys Met Phe Val Asp Leu Asn Pro Asp Ala Asp Lys Ile Ile
305 310 315 320

Tyr Ser His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val
325 330 335

Phe Ala Ala Val Lys Asp Thr Ile Leu Gln His Asn Leu Lys Glu Tyr
340 345 350

Asn Leu Val
355

<210> 18

<211> 355

<212> PRT

<213> Geodia cydonium

<400> 18

Met Ser Cys Leu Leu Ser Glu Glu Glu Arg Leu Gln Lys Arg Ile Asn
1 5 10 15

Thr Arg Ile Asn Arg Glu Leu Gln Arg Asp His Lys Asp Ala Lys Lys
20 25 30

Glu Ile Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Lys Gly Tyr Ser Lys Gln
50 55 60

Asp Cys Leu Glu Tyr Lys Asn Leu Val Phe Arg Asn Ile Leu Met Ser
65 70 75 80

Met His Ser Met Leu Gln Ala Thr Ala Glu Leu Lys Ile Ala Tyr Ile
85 90 95

Asp Pro Asp Ala Gln Arg His Val Gln Leu Leu Met Ala Leu Arg Pro
100 105 110

Glu Thr Ala Gln Ser Leu Gly Gly Glu Thr Cys Glu Ala Ile Arg Lys
115 120 125

Leu Trp Gln Asp Ala Gly Val Gln Glu Cys Tyr Gln Arg Arg Asn Glu
130 135 140

Tyr Gln Leu Ser Asp Ser Thr Lys Tyr Tyr Leu Asp Asp Leu Pro Arg
145 150 155 160

Ile Ser Ser Asn Asp Tyr Val Pro Thr Thr Gln Asp Val Leu Arg Val
165 170 175

Arg Val Pro Thr Thr Gly Ile Asn Glu Tyr Pro Phe Thr Ile Asn Lys
180 185 190

Ile Ile Phe Lys Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
195 200 205

Lys Trp Ile His Cys Phe Asp His Val Thr Ser Val Met Phe Leu Val
210 215 220

Ala Ile Ser Glu Tyr Asp Gln Ile Leu Val Glu Ala Asp Ser Arg Val
225 230 235 240

Asn Arg Met Val Glu Ser Leu His Leu Phe Asn Thr Ile Ile Ser Tyr
245 250 255

Pro Trp Phe Asn Lys Ser Ser Ile Ile Leu Phe Leu Asn Lys Lys Asp
260 265 270

Leu Leu Glu Glu Lys Val Met His Ser His Leu Ile Asp Tyr Phe Glu
275 280 285

Glu Tyr Asp Gly Pro Lys Cys Asp His Val Ser Ala Arg Glu Ser Ile
290 295 300

Ala Lys Met Phe Ile Ser Ile Asn Asp Met Arg Ser Ala Asp Ile Tyr
305 310 315 320

Pro His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Lys Phe Val Phe
325 330 335

Asp Val Val Lys Asn His Ile Leu Gln Gln His Ile Thr Glu Val Val
340 345 350

Pro Gly Leu
355

<210> 19
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 19
gaatatgatg gaccccagag agatg 25

<210> 20
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 20
gatcctcgag ttagcacagt ccgatgtact tcaggttcaa ctggaggatg gt 52

<210> 21
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 21
gatcctcgag ttagtacagt ccgcattccct tcaggttcaa ctggaggatg gt 52

<210> 22
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 22
gatcctcgag ttagtaaagc ccacattccct tcaggttcaa ctggaggatg gt 52

<210> 23
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 23
gatcctcgag ttagagcagc tcgtattgct tcaggttcaa ctggaggatg gt 52

<210> 24
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 24
ggaaaaaaagc ggccgcttaa aacagtccgc agtccttcag gttcaactgg aggatgg 58

<210> 25
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 25
ggggtaccgc cgccatggcc tgctgtttat cc 32

<210> 26
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 26
gctctagatt acaccaagtt gtactccttc agatt 35

<210> 27
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 27
ctctccgatc tccgacggct g

21

<210> 28
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 28
ttctacagca taatctgaag tatatcggtt tgtgttaatc tagagggccc gtttaaaccc 60
gctg 64

<210> 29
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 29
cagcgggtt aaacgggccc tctagattaa cacaaaccga tatacttcag attatgctgt 60
agaa 64

<210> 30
<211> 46
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 30
cagcataatc tgaaggagtg tggattgtac taatctagag ggcccg

46

<210> 31
<211> 46
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 31

cgggccctct agattagtagc aatccacact ctttcagatt atgctg

46

<210> 32

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 32

ggaaaaaaagc ggccgcttag agcagctcg attgcctcag gtgcatactgg aggatggtgt 60

69

<210> 33

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 33

gctctagatt agaggagctc gtattgcctc aggtgcatact gtagaattgt gtcttgacg 60

63

<210> 34

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 34

gctctagatt aacatagccc tatgtatattt agattattct gtagaattgt gtcttgacg 60

63

<210> 35
<211> 98
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 35
gctctagatt agagcagctc gtattgcctc aggtgcatac gttgaataat gtcacgacag 60
tcattaaaaa cacgccaat gtttccgta tcagtcgc 98

<210> 36
<211> 6
<212> PRT
<213> vertebrate

<400> 36
Met Thr Leu Glu Ser Ile
1 5

<210> 37
<211> 21
<212> PRT
<213> invertebrate

<400> 37
Phe Val Phe Ala Ala Val Lys Asp Thr Ile Leu Gln His Asn Leu Lys
1 5 10 15
Glu Tyr Asn Leu Val
20

<210> 38
<211> 21
<212> PRT
<213> vertebrate

<400> 38
Phe Val Phe Asp Ala Val Thr Asp Val Ile Ile Gln Asn Asn Leu Lys
1 5 10 15
Tyr Ile Gly Leu Cys
20

<210> 39
<211> 21
<212> PRT
<213> vertebrate

<400> 39
Arg Val Phe Asn Asp Cys Arg Asp Ile Ile Gln Arg Met His Leu Arg
1 5 10 15

Gln Tyr Glu Leu Leu
20

<210> 40
<211> 21
<212> PRT
<213> vertebrate

<400> 40
Phe Val Phe Asp Ala Val Thr Asp Val Ile Ile Lys Asn Asn Leu Lys
1 5 10 15

Glu Cys Gly Leu Tyr
20

<210> 41
<211> 353
<212> PRT
<213> Drosophila melanogaster

<400> 41
Met Glu Cys Cys Leu Ser Glu Glu Ala Lys Glu Gln Lys Arg Ile Asn
1 5 10 15

Gln Glu Ile Glu Lys Gln Leu Arg Arg Asp Lys Arg Asp Ala Arg Arg
20 25 30

Glu Leu Lys Leu Leu Leu Gly Thr Gly Glu Ser Gly Lys Ser Thr
35 40 45

Phe Ile Lys Gln Met Arg Ile Ile His Gly Ser Gly Tyr Ser Asp Glu
50 55 60

Asp Lys Arg Gly Tyr Ile Lys Leu Val Phe Gln Asn Ile Phe Met Ala
65 70 75 80

Met Gln Ser Met Ile Lys Ala Met Asp Met Leu Lys Ile Ser Tyr Gly
85 90 95

Gln Gly Glu His Ser Glu Leu Ala Asp Leu Val Met Ser Ile Asp Tyr
100 105 110

Glu Thr Val Thr Thr Phe Glu Asp Pro Tyr Leu Asn Ala Ile Lys Thr
115 120 125

Leu Trp Asp Asp Ala Gly Ile Gln Glu Cys Tyr Asp Arg Arg Arg Glu
130 135 140

Tyr Gln Leu Thr Asp Ser Ala Lys Tyr Tyr Leu Lys Asp Leu Asp Arg
145 150 155 160

Val Ala Gln Pro Ala Tyr Leu Pro Thr Glu Gln Asp Ile Leu Arg Val
165 170 175

Arg Val Pro Thr Thr Gly Ile Ile Glu Tyr Pro Phe Asp Leu Glu Glu
180 185 190

Ile Arg Phe Arg Met Val Asp Val Gly Gly Gln Arg Ser Glu Arg Arg
195 200 205

Lys Trp Ile His Cys Phe Glu Asn Val Thr Ser Ile Ile Phe Leu Val
210 215 220

Ala Leu Ser Glu Tyr Asp Gln Ile Leu Phe Glu Ser Asp Asn Glu Asn
225 230 235 240

Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr Tyr Pro
245 250 255

Trp Phe Gln Asn Ser Ser Val Ile Leu Phe Leu Asn Lys Lys Asp Leu
260 265 270

Leu Glu Glu Lys Ile Met Tyr Ser His Leu Val Asp Tyr Phe Pro Glu
275 280 285

Tyr Asp Gly Pro Gln Arg Asp Ala Ile Thr Ala Arg Glu Phe Ile Leu
290 295 300

Arg Met Phe Val Asp Leu Asn Pro Asp Ser Glu Lys Ile Ile Tyr Ser
305 310 315 320

His Phe Thr Cys Ala Thr Asp Thr Glu Asn Ile Arg Phe Val Phe Ala
325 330 335

Ala Val Lys Asp Thr Ile Leu Gln Ser Asn Leu Lys Tyr Ile Gly Leu
340 345 350

Cys

<210> 42
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 42
cgggttaccc cggttagcat ggagtgctgt ttatcg

36

<210> 43
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 43
ccggaattcc ggtagacca aattatattc cttaaaggttc

40

<210> 44
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 44
gagcatcgat tacgagaccc ttacc

25

<210> 45
<211> 53
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 45

cggaattctt agcacagtcc gatgtactta aggttcgatt gcagaattgt gtc

53